

EMRs and EHRs

Concepts as different as apples and oranges at least deserve separate names.

by Dave Garets and Mike Davis

Whether you say EMR or EHR is more than a matter of semantics. Electronic medical records (EMRs) and electronic health records (EHRs) are not the same thing. The acronyms represent entirely different concepts, so insisting that they're used correctly is more than quibbling over words.

Unless you're fairly well versed in advanced clinical information technologies, you're probably confused, because the press, vendors, government officials and industry mavens sometimes unintentionally use the terms incorrectly. Particularly galling are excuses from people who know the difference but use the terms interchangeably, saying "Well, that's the way the world seems to be heading" or "the horses are already out of the barn" or "I know better, but my editors have decided to call both concepts EHR." Unfortunately, we didn't make up these quotations.

Most care delivery organization (CDO) decision makers, clinicians, legislators, bureaucrats and members of the press are *not* experts in healthcare IT. If they're observant, however, and read the unending press releases that attempt to pass for news, they know that the latest rage is regional healthcare information organizations (RHIOs) purporting to share summary information (EHRs) from patient records (EMRs). But then somebody in authority calls both things by the same name, and confusion reigns. Bad decisions get made because people aren't talking about the same thing when they use the acronyms.

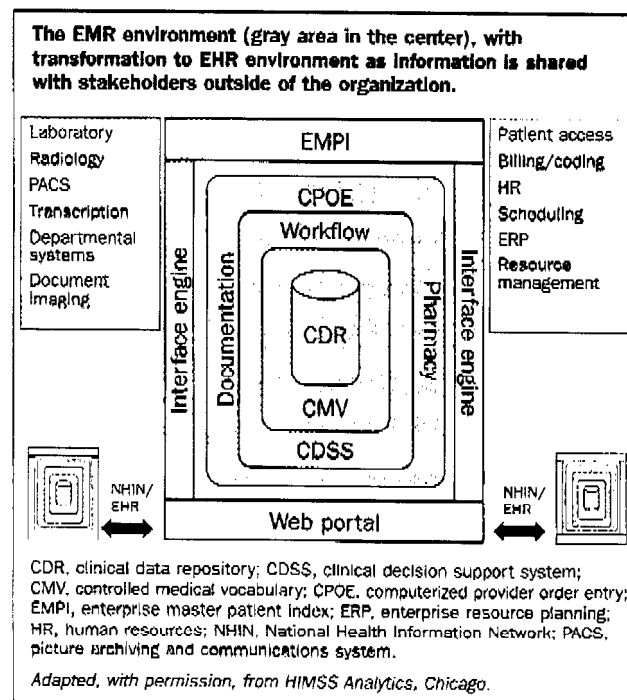
What's the difference?

EMRs are computerized legal clinical records created in CDOs, such as hospitals and physician offices. EHRs represent the ability to easily share medical information among stakeholders and to allow it to follow the patient through various modalities of care from different CDOs. Stakeholders in this context are consumers, healthcare providers, employers and payers, including the government. Because our organization focuses on researching healthcare IT and must be clear in questions to healthcare providers, we've established the following definitions:

- **EMR:** An application environment composed of

the clinical data repository (CDR), clinical decision support system (CDSS), controlled medical vocabulary (CMV), computerized provider order entry (CPOE), pharmacy and clinical documentation applications. The patient's electronic record is supported across inpatient and outpatient environments; is used by healthcare practitioners to document, monitor and manage care delivery within the CDO; and is owned by the CDO. The data in the EMR is the legal record of what happened to the patient during encounters at the CDO.

- **EHR:** A subset of each CDO's EMR, presently assumed to include summaries, such as ASTM's Continuity of Care Record (CCR) and HL7's Care Record Summary (CRS), and possibly information from pharmacy benefit management firms, reference labs and other organizations about the health status of patients in the community. It contains patient input and access spanning episodes of care across multiple CDOs within a community, region, or state (or



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in some countries, the entire country). The patient controls access to information. In the United States, EITRs will ride on the proposed National Health Information Network (NHIN).

Before effective EHRs are possible, provider organizations must implement complete EMR systems. At this point, few acute care or ambulatory facilities have EMR solutions capable of reducing medical errors or improving the quality and efficiency of patient care. Care providers have a long journey ahead to achieve the EHR visions being espoused in Washington, D.C., and in the more than 200 RHIO initiatives, many of which have questionable business models and funding, in various states of development across the country.

A closer look at environments

The EMR environment is complex and sophisticated (see graph on page 53). Its foundation is the CDR, a real-time transaction-processing database of clinical patient information. The CDR is fed from ancillary systems (e.g., laboratory, radiology, pharmacy) and displays, among other clinical and administrative data, current results of tests and procedures to caregivers.

A CMV normalizes data from a relational and definitional hierarchy, enabling other components of the EMR to operate optimally. The CMV is critical, because it ensures that practitioners are accessing accurate and comparable data. Without it, the CDSS and workflow components of the EMR do not perform as expected.

Applications of the EMR are clinical documentation for all clinicians, CPOE for all clinicians, and pharmacy management. We believe that the pharmacy management application has transitioned from a departmental system to an application of the EMR because of patient safety concerns and the need for integration (as opposed to interface) with CPOE, documentation applications, and the electronic medication administration record (e-MAR).

These EMR applications are tightly coupled with the CDR data schema and the CMV, CDSS and workflow components and are designed and built on the same architecture as the EMR components. Before physicians can use CPOE effectively, a solid EMR foundation, with nursing adoption of CPOE and clinical documentation applications, needs to be established.

Ideally, the EHR environment relies on functional EMRs that allow CDOs to exchange information with other CDOs or stakeholders, especially patients, within the community, region or nation. Feeding clinical summary information to an EHR needs to be a seamless byproduct of workflow automation in the acute care or ambulatory environment, not a separate process requiring keying data into a RHIO's system.

The evolving NHIN standards are integral to establishing effective information flow between CDOs and

stakeholders. Currently, early EHR prototypes are being tested in Santa Barbara, Calif., Marion County, Ind., and a few other locales.

What's in the way of EHRs?

Several issues are holding up EITR progress. For one thing, there is no agreed-upon definition of the patient clinical summary that will comprise the EHR. ASTM and HL7 are working on the summary but, to date, have not agreed on the components or the structure. Their differences appear to center around "incremental interoperability," which describes how fast provider participants must move to submit coded data to the patient summary.

Another snag is that 1,154 U.S. acute care hospitals (29 percent of such nonfederal facilities) have not fully implemented a base of the three major clinical ancillary department applications (i.e., laboratory, pharmacy and radiology), nor have they begun implementing an EMR. About 83 percent of those hospitals do have one or two applications installed, but 61 hospitals have none. Those 1,154 hospitals are going to have a tough time effectively participating in a RHIO and contributing to an EHR.

In addition, more than 67 percent of nonfederal U.S. hospitals have yet to fully implement nursing documentation (much less physician documentation), an e-MAR, CPOE, or CDSS to provide clinical protocol information to caregivers. Billions of dollars will be required in the next few years just to get hospitals outfitted with functional EMR technologies, and that doesn't count the millions needed in physician practices. Most studies show that less than 20 percent of U.S. physicians have access to an ambulatory EMR.

While some forms of early EHRs exist today in limited environments, establishing effective EHRs across the country will be difficult until clinical information transaction standards are developed that can be easily adopted by the various EMR application architectures now available.

No fruit cocktail allowed

There's a lot riding on making intelligent decisions. Acute care delivery organizations are making multi-million dollar IT decisions. Physicians are making multi-thousand dollar investments in IT for their practices. Dozens of RHIO initiatives are under way to help share patient information for better clinical decision making and cost savings. Congress is mulling multiple bills to encourage the use of IT in healthcare delivery.

The subject is confusing enough without misusing the terminology. Different concepts require different names. The least we can do is try to communicate healthcare IT issues clearly, without mixing pomes and citrus! ■

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